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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,572	09/15/2003	Susumu Maekawa	392.1816	7965

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EXAMINER	
WALLING, MEAGAN S	

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/661,572	MAEKAWA ET AL.	
	Examiner	Art Unit	
	Meagan S. Walling	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/3/05, 3/30/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Yasugi (US 2003/0163286).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Yasugi teaches cutting load detecting means for detecting a cutting load (par. 12); means for obtaining at least one of three cutting load data by said cutting load detecting means, including a cutting time, an area of a cutting load waveform during cutting, and a maximum absolute value of a slope of a drop in a cutting load during the cutting, in a machining cycle, as a load state value in a current machining cycle (par. 23); means for updating and obtaining a moving variable threshold based on the load state value calculated in a

machining cycle before the current machining cycle (par. 13); and means for comparing the load state value in the current machining cycle with the moving variable threshold to determine an abnormal condition of the tool (par. 12).

Regarding claim 2, Yasugi teaches that the machining cycle before the current cycle is the machining cycle immediately before or a plurality of cycles before the current machining cycle (par. 13).

Regarding claim 3, Yasugi teaches that the moving variable threshold is obtained based on an average value of load state values of respective machining cycles and calculated in all machining cycles from a first machining cycle to a machining cycle immediately before the current machining cycle or in a plurality of machining cycles before the current machining cycle (par. 13).

Regarding claim 4, Yasugi teaches cutting load detecting means for detecting a cutting load (par. 12); means for obtaining at least one of three cutting load data by said cutting load detecting means, including a cutting time, an area of a cutting load waveform during cutting, and a maximum absolute value of a slope of a drop in a cutting load during the cutting, in a machining cycle, as a load state value in a current machining cycle (par. 23); means for updating and obtaining a moving variable threshold based on the load state value calculated in a machining cycle for a preceding workpiece at the machining position which corresponds to the machining position in the current machining cycle (par. 13); and means for comparing the load state value in the current machining cycle with the moving variable threshold to determine an abnormal condition of the tool (par. 12).

Regarding claim 5, Yasugi teaches that the preceding workpiece is the workpiece immediately before or a plurality of cycles before the current machining cycle (par. 13).

Regarding claim 6, Yasugi teaches that the moving variable threshold is obtained based on an average value of load state values in machining cycles at the corresponding machining positions, calculated for all workpieces from a workpiece machined first to a workpiece machined in an immediately preceding cycle or in a plurality of workpieces machined before (par. 15).

Regarding claim 7, Yasugi teaches that the moving variable threshold is obtained by multiplying the obtained load state value by a predetermined coefficient (par. 17).

Regarding claim 8, Yasugi teaches that the moving variable threshold is obtained by adding a predetermined value to the obtained load state value (par. 25).

Regarding claim 9, Yasugi teaches means for providing an instruction to activate an audible alarm and/or a warning light or means for providing an instruction to replace the tool or to stop operation of the machine when the means for determining an abnormal condition of the tool determines that the tool is in an abnormal condition (par. 64).

Regarding claim 10, Yasugi teaches that the means for determining an abnormal condition of the tool determines that the tool is in an abnormal condition when the load state value in the current machining cycle exceeds the moving variable threshold (par. 21).

Regarding claim 11, Yasugi teaches that the means for determining an abnormal condition of the tool determines that the tool is in an abnormal condition when the load state value in the current machining cycle becomes smaller than the moving variable threshold (par. 22).

Regarding claim 12, Yasugi teaches that the means for determining an abnormal condition of the tool obtains a first moving variable threshold and a second moving variable threshold smaller than the first moving variable threshold for the area of the cutting load waveform and the maximum absolute value of the slope of the drop in the cutting load and determines that the tool is in an abnormal condition when the load state value in the current machining cycle exceeds the first moving variable threshold or when the load state value in the current machining cycle becomes smaller than the second moving variable threshold (par. 22).

Regarding claim 13, Yasugi teaches that the cutting load detecting means detects a load of a feed shaft or a main shaft to which the cutting load is applied (par. 12).

Regarding claim 14, Yasugi teaches that the cutting load detecting means detects the load by an observer for estimating an applied load or by a driving current of a motor for driving a feed shaft or a motor for driving a main shaft to which the cutting load is applied (par. 86).

Regarding claim 15, Yasugi teaches that the moving variable threshold is obtained by multiplying the obtained load state value by a predetermined coefficient (par. 17).

Regarding claim 16, Yasugi teaches that the variable threshold is obtained by adding a predetermined value to the obtained load state value (par. 25).

Regarding claim 17, Yasugi teaches means for providing an instruction to activate an audible alarm and/or a warning light or means for providing an instruction to replace the tool or to stop operation of the machine when the means for determining an abnormal condition of the tool determines that the tool is in an abnormal condition (par. 64).

Regarding claim 18, Yasugi teaches that the means for determining an abnormal condition of the tool determines that the tool is in an abnormal condition with the load state value in the current machining cycle exceeds the moving variable threshold (par. 21).

Regarding claim 19, Yasugi teaches that the mans for determining an abnormal condition for the tool determines that the tool is in an abnormal condition when the load state value in the current machining cycle becomes smaller than the moving variable threshold (par. 22).

Regarding claim 20, Yasugi teaches that the means for determining an abnormal condition of the tool obtains a first moving variable threshold and a second moving variable threshold smaller than the first moving variable threshold for the area of the cutting load waveform and the maximum absolute value of the slope of the drop in the cutting load and determines that the tool is in an abnormal condition when the load state value in the current machining cycle exceeds the first moving variable threshold or when the load state value in the current machining cycle becomes smaller than the second moving variable threshold (par. 22).

Regarding claim 21, Yasugi teaches that the cutting load detecting means detects a load of a feed shaft or a main shaft to which the cutting load is applied (par. 12).

Regarding claim 22, Yasugi teaches that the cutting load detecting means detects the load by an observer for estimating an applied load or by a driving current of a motor for driving a feed shaft or a motor for driving a main shaft to which the cutting load is applied (par. 86).

Regarding claim 23, Yasugi teaches obtaining a load state value during a current machining cycle (par. 12); updating a moving variable threshold based on a prior load state value calculated in a machining cycle before the current machining cycle (par. 13); and comparing the

load state value in the current machining cycle with the moving variable threshold to determine a condition of the tool (par. 12).

Regarding claim 24, Yasugi teaches that the load state value includes at least one of a cutting time, an area of cutting load waveform during cutting, and a maximum absolute value of a slope of a drop in a cutting load during the cutting (par. 23).

Regarding claim 25, Yasugi teaches a cutting load detector to detect a cutting load (par. 12); a monitor to obtain, via the cutting load detector, at least one of a cutting time, an area of a cutting load waveform during cutting, and a maximum absolute value of a slope of a drop in a cutting load during the cutting, in a machining cycle, as a load state value in a current machining cycle (par. 23); a threshold calculator to update a moving variable threshold based on the load state value calculated in a machining cycle before the current machining cycle (par. 13); and an analyzer to compare the load state value in the current machining cycle with the moving variable threshold to determine a condition of the tool (par. 12).

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meagan S. Walling whose telephone number is (571) 272-2283. The examiner can normally be reached on Monday through Friday 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

msw

John Barlow
Supervisory Patent Examiner
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